



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,675	11/20/2003	Ryo Nishikawa	107355-00094	7358

7590 02/28/2005
ARENT FOX KINTNER PLOTKIN & KAHN, PLLC
Suite 400
1050 Connecticut Avenue, N.W.
Washington, DC 20036-5339

EXAMINER

LEYKIN, RITA

ART UNIT PAPER NUMBER

2837

DATE MAILED: 02/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

10/716,675

Applicant(s)

NISHIKAWA ET AL.

Examiner

Rita Leykin

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/20/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claim 1 and 3-6 are rejected under 35 U.S.C. 102(a) as being anticipated by Niwa et al. US # 6,454,364.

Niwa et al. provides for a braking force control having regenerative braking device for front wheels and rear wheels of four-wheel hybrid vehicle, that are optimally operated, thus assuring an improved regeneration efficiency of the vehicle as a whole, (see column 2, lines 1-10). In Fig.1 Niwa et al. meets claimed structural limitations such as:

- An engine 12;
- A front wheel motor 14 as a primary motor and front differential gear 22 that are part of the front regenerative braking device 30;
- A rear wheel motor 42, as a secondary motor and rear differential gear 38 that are part of the rear regenerative braking device 40;

- A continuous variable transmission 18, that incorporates a clutch, (see column 3, line 23);
- The motor 14 also functions as a generator of a regenerative braking for front wheel;
- The engine control unit 28 controls regenerative braking effected by motor/generator 42, thus controlling the regenerative braking of both front and rear braking device systems 30 and 40, (see column 3, lines 15-67 and column 4, lines 1-4 and column 9, lines 61-65);
- A braking force calculation unit 52 calculates final target deceleration of the vehicle, (see column 4, lines 41-67);
- The engine control unit 28 controls the motor/generator 14 of the front wheel regenerative braking device 30 using front wheel target regenerative braking force as an upper limit thereof and calculates the actual regenerative braking force of the front wheel regenerative braking device 30. Wherein transmission and clutch and differential gear are part of the regenerative device that contributes to rotational parameters of the regenerative braking device 30;
- Similarly the engine control unit 28 controls the motor/generator 42 of the rear wheel regenerative braking device 40. Then the engine control unit 28 outputs signals indicative of the actual regenerative braking forces to the braking control unit 52, (see column 5, lines 1-23). The engine control unit 28 calculates actual regenerative braking forces of the front and rear

wheels based on voltage and current generated by respective motor/generators and calculates the target front-wheel friction braking force and target rear-wheel friction braking force by subtracting the actual regenerative braking forces from the target braking forces;

- The determination of maximum and minimum regenerative forces (regenerative capacity) of the motor/generators is discussed in column 7, lines 12-34. Even though Niwa et al. do not specifically teach the election of the motor/generator with a larger generation capacity, however such election is inherent to Niwa et al. teaching, because the maximum motor/generator generating capacity is part of the over Niwa et al. calculations.

With respect to claims 3 and 4 Niwa et al. in column 9, lines 62-67 suggests that regeneration can be performed by secondary electric motor.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2837

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al. US # 6,528,959.

The limitations of the base claims 1 have been discussed in the rejection in paragraph above.

With respect to claim 5 Niwa et al. do not teach detection of slippage and prohibition of regenerating in primary and secondary motors. However, Kitano et al. disclose front-and-rear wheel drive vehicle where in his reference to prior art document Kitano et al. teaches that during detected slippage the operation of the electric motor is inhibited, thereby saving electric energy of the vehicle, (see column 1, lines 17-36). That includes claimed by the applicant prohibition of the regeneration of the primary and secondary motors.

Hence, it has been obvious to one of ordinary skills in the art, at the time invention was made to include Kitano et al. teaching on slippage detection and prohibition of motor operation during the slippage in Niwa et al. teaching for providing regenerative braking only when slippage is not detected.

The reason is to save electric energy of the vehicle.

Allowable Subject Matter

5. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6.

7. The following is a statement of reasons for the indication of allowable subject matter. The prior art made of record in the attached form PTO-892 considered to be pertinent to the submitted application. However, none of the prior art teaches or suggest in combination:

- Considering the efficiency of a transmission connected to the primary electric motor and the transmission loss experienced by a rear differential gear when calculating a regenerative capacity of the primary electric motor;
- Efficiency of the rear differential gear connected to the secondary electric motor and a transmission loss experienced by the transmission are taken into consideration when calculating a regeneration capacity of the secondary electric motor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rita Leykin whose telephone number is (571)272-2066. The examiner can normally be reached on Monday-Friday 8:30-6:00.

Art Unit: 2837

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571)272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rita Leykin
Primary Examiner
Art Unit 2837

A handwritten signature in black ink that reads "Rita Leykin". The signature is written in a cursive, flowing style.

R.L.